Munich Cancer Registry

Munich Cancer Registry at Munich Cancer Center
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http://www.tumorregister-muenchen.de/en

Cancer statistics: Baseline statistics

C49: Soft tissue cancer

Year of diagnosis	1998-2012
Patients	1,785
Diseases	1,792
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m

**Global Statements about the statistics on the Internet –
Baseline Statistics** (grey button   )**, Survival** (red button   )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.5 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR. The time-delayed acquisition of data and the occasionally high DCO-rates indicate optimizing reserves, among others, because of current financial and legal conditions that hinder the analyses.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, March 2014

[#]   Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.51 million to 3.96 in 2002, and to 4.52 million in 2007). Death certificates from 2013 are incorporated into these analyses.

[##]   Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###]   DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.

INCIDENCE

Table 1

Patient cohorts by year of diagnosis including DCO cases
and multiple primaries, and with proportion of deaths and active follow-up

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	84	7	8.3	25.0	77.4	100.0
1999	85	5	5.9	32.9	55.3	97.6
2000	89	9	10.1	27.0	56.2	97.8
2001	70	9	12.9	12.9	54.3	98.6
2002	111	9	8.1	20.7	63.1	97.3 #
2003	137	15	10.9	23.4	60.6	94.9 #
2004	118	12	10.2	21.2	53.4	99.2 #
2005	151	7	4.6	21.2	53.0	93.4 #
2006	108	9	8.3	29.6	53.7	95.4 #
2007	148	6	4.1	19.6	42.6	77.0 # ##
2008	152	6	3.9	23.0	51.3	73.0
2009	156	7	4.5	29.5	46.2	73.1
2010	140	5	3.6	22.1	42.9	70.0
2011	150	10	6.7	34.7	36.7	78.0
2012	93	11	11.8	19.4	26.9	97.8 ###
1998–2012	1792	127	7.1	24.4	50.6	87.4

\#   The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

\##   Since 2007 the percentage of actively followed patients sharply declined compared to the previous years. This is a consequence of ambiguous data protection rules that currently forbid cancer registries in Bavaria to obtain the essential life status informations from competent registration offices.

\###   Please be aware that data of recent annual patient cohorts may not yet be fully processed. Therefore, the presented figures and tables are potentially related to different time periods as pointed out in the respective headlines or legends.

Table 1a

Patient cohorts by year of diagnosis and gender
including DCO cases

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	84	41	43	48.8
1999	85	49	36	57.6
2000	89	43	46	48.3
2001	70	33	37	47.1
2002	111	67	44	60.4
2003	137	60	77	43.8
2004	118	67	51	56.8
2005	151	77	74	51.0
2006	108	62	46	57.4
2007	148	72	76	48.6
2008	152	80	72	52.6
2009	156	82	74	52.6
2010	140	72	68	51.4
2011	150	79	71	52.7
2012	93	47	46	50.5
1998-2012	1792	931	861	52.0

Table 2

Incidence measures by year of diagnosis and gender including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.52 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	41	43	3.7	3.7	2.7	2.2	3.5	2.7	4.3	3.1
1999	49	36	4.4	3.0	3.2	2.0	4.0	2.5	4.7	2.8
2000	43	46	3.8	3.8	2.8	2.7	3.5	3.2	4.1	3.6
2001	33	37	2.8	3.0	2.2	1.9	2.8	2.5	3.3	2.8
2002	67	44	3.6	2.2	2.8	1.4	3.3	1.7	3.7	1.9
2003	60	77	3.2	3.9	2.4	2.1	2.9	2.8	3.4	3.4
2004	67	51	3.6	2.6	2.5	1.8	3.1	2.1	3.5	2.4
2005	77	74	4.1	3.7	3.3	2.3	3.8	2.8	3.9	3.4
2006	62	46	3.2	2.3	1.9	1.6	2.7	1.9	3.3	2.0
2007	72	76	3.3	3.3	2.0	2.0	2.6	2.5	3.2	2.8
2008	80	72	3.6	3.1	2.4	1.7	3.1	2.2	3.5	2.6
2009	82	74	3.7	3.2	2.1	1.9	2.9	2.5	3.6	2.8
2010	72	68	3.2	2.9	2.1	1.5	2.7	2.0	3.1	2.5
2011	79	71	3.5	3.0	2.0	1.6	2.7	2.1	3.3	2.4
2012	47	46	2.1	1.9	1.2	1.2	1.6	1.5	1.9	1.7
1998-2012	931	861	3.4	3.0	2.3	1.8	2.9	2.3	3.4	2.6

The computation of the incidence measures includes all primaries, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (All)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	84	60.1	23.2	0.4	93.2	28.3	45.4	66.8	77.1	85.7
1999	85	59.3	18.1	3.5	97.4	37.2	49.5	62.0	72.0	78.6
2000	89	56.2	22.9	0.2	97.1	28.1	40.2	60.3	75.1	82.6
2001	70	59.1	18.4	11.8	95.4	37.8	47.1	60.0	73.0	82.1
2002	111	57.6	23.7	0.0	93.0	28.0	42.7	63.0	76.4	83.9
2003	137	61.5	21.0	5.3	92.5	26.6	52.2	66.1	77.7	84.0
2004	118	58.0	21.2	1.3	96.1	25.6	44.2	64.0	73.5	80.6
2005	151	57.1	22.1	0.2	92.0	28.4	44.4	62.2	73.3	81.9
2006	108	61.3	20.9	1.6	103	33.8	51.8	63.2	78.5	83.9
2007	148	61.6	19.8	0.2	96.4	35.5	52.8	66.3	75.1	81.7
2008	152	61.9	19.7	0.3	101	34.2	50.0	65.1	76.5	85.5
2009	156	64.6	18.5	2.2	94.3	36.2	57.2	68.2	77.7	85.0
2010	140	61.8	19.7	3.4	97.3	33.6	49.6	65.9	76.0	82.2
2011	150	63.8	18.7	11.7	96.8	38.9	51.0	67.5	78.4	86.8
2012	93	63.0	20.4	0.7	98.4	38.9	52.7	65.8	75.9	84.7
1998-2012	1792	60.7	20.6	0.0	103	32.6	49.1	64.6	75.9	83.5

Table 3a

Age distribution parameters by year of diagnosis (MALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	41	56.8	22.8	0.4	90.8	28.3	40.4	63.3	73.8	82.5
1999	49	59.4	19.1	3.5	97.4	33.0	52.4	61.9	72.0	78.6
2000	43	56.6	22.8	0.2	88.5	28.9	40.2	59.7	71.6	84.3
2001	33	58.8	22.2	11.8	95.4	32.2	47.0	58.1	76.1	87.1
2002	67	54.4	24.4	0.1	92.4	20.1	36.1	59.8	72.1	81.3
2003	60	56.2	22.8	8.1	89.5	20.5	39.6	59.2	73.1	85.1
2004	67	57.6	20.1	1.3	85.8	32.1	44.6	64.3	71.7	78.7
2005	77	52.3	22.6	0.2	90.9	9.2	39.3	58.8	66.9	74.1
2006	62	63.3	16.9	15.9	86.9	38.9	55.0	63.8	77.9	82.7
2007	72	62.1	20.5	0.2	96.4	35.9	54.0	67.9	75.6	80.5
2008	80	59.1	19.6	0.3	95.2	33.6	46.5	61.8	73.3	80.9
2009	82	66.9	19.5	5.2	93.0	36.2	61.6	70.6	79.3	86.9
2010	72	59.2	21.2	3.4	92.7	31.9	47.5	60.4	74.6	82.8
2011	79	62.3	18.1	16.7	95.0	36.0	50.5	66.9	75.8	82.5
2012	47	63.7	18.7	1.3	95.5	32.9	51.8	67.7	75.2	84.4
1998-2012	931	59.4	20.9	0.1	97.4	31.7	47.0	63.5	74.1	82.7

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	43	63.2	23.4	3.4	93.2	33.0	50.8	72.3	77.9	86.2
1999	36	59.2	16.8	17.4	87.7	38.5	45.4	63.2	71.3	83.0
2000	46	55.7	23.2	0.4	97.1	22.7	34.9	60.8	75.8	80.7
2001	37	59.4	14.6	26.1	85.9	39.8	48.6	61.1	70.1	81.0
2002	44	62.5	21.9	0.0	93.0	33.1	49.3	67.8	79.1	85.7
2003	77	65.6	18.6	5.3	92.5	38.2	58.3	67.8	78.9	84.0
2004	51	58.5	22.8	2.4	96.1	21.5	41.4	63.6	74.6	83.5
2005	74	62.2	20.5	2.8	92.0	28.7	52.5	67.6	78.8	82.6
2006	46	58.5	25.2	1.6	103	17.1	40.8	61.7	79.1	86.5
2007	76	61.0	19.3	0.3	88.2	35.5	51.8	66.0	74.0	82.7
2008	72	65.1	19.6	6.1	101	35.6	52.6	67.3	80.0	86.7
2009	74	62.2	17.0	2.2	94.3	39.8	55.8	63.6	74.6	80.3
2010	68	64.6	17.6	21.8	97.3	40.1	52.5	67.6	77.8	82.0
2011	71	65.5	19.3	11.7	96.8	41.1	51.2	68.0	81.5	87.8
2012	46	62.2	22.2	0.7	98.4	38.9	52.7	63.8	81.4	84.9
1998-2012	861	62.2	20.2	0.0	103	34.2	51.3	65.7	77.5	84.4

Table 4

Age distribution by 5-year age group and gender for period 1998-2012
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	41	2.3	2.3	27	2.9	2.9	14	1.6	1.6
5-9	15	0.8	3.1	9	1.0	3.9	6	0.7	2.3
10-14	14	0.8	3.9	7	0.8	4.6	7	0.8	3.1
15-19	22	1.2	5.1	12	1.3	5.9	10	1.2	4.3
20-24	22	1.2	6.4	11	1.2	7.1	11	1.3	5.6
25-29	38	2.1	8.5	17	1.8	8.9	21	2.4	8.0
30-34	67	3.7	12.2	39	4.2	13.1	28	3.3	11.3
35-39	73	4.1	16.3	49	5.3	18.4	24	2.8	14.1
40-44	92	5.1	21.4	48	5.2	23.5	44	5.1	19.2
45-49	79	4.4	25.8	38	4.1	27.6	41	4.8	23.9
50-54	118	6.6	32.4	62	6.7	34.3	56	6.5	30.4
55-59	153	8.5	41.0	79	8.5	42.7	74	8.6	39.0
60-64	175	9.8	50.7	91	9.8	52.5	84	9.8	48.8
65-69	205	11.4	62.2	112	12.0	64.6	93	10.8	59.6
70-74	199	11.1	73.3	111	11.9	76.5	88	10.2	69.8
75-79	186	10.4	83.6	86	9.2	85.7	100	11.6	81.4
80-84	145	8.1	91.7	64	6.9	92.6	81	9.4	90.8
85+	148	8.3	100.0	69	7.4	100.0	79	9.2	100.0
All ages	1792	100.0		931	100.0		861	100.0	

Included in the statistics are 31.3% multiple primaries in males and 31.0% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2012

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=57 %	Females DCO rate n=70 %	Males Prop.all cancers n=146755 %	Females Prop.all cancers n=142297 %
0- 4	27	14	2.0	1.1	7.4		8.8	6.2
5- 9	9	6	0.6	0.5			5.5	5.3
10-14	7	7	0.5	0.5			4.8	4.3
15-19	12	10	0.8	0.7	8.3	10.0	3.8	3.7
20-24	11	11	0.7	0.7	9.1		2.0	2.3
25-29	17	21	0.9	1.1			1.9	2.1
30-34	39	28	1.8	1.4		3.6	2.8	1.5
35-39	49	24	2.1	1.1	6.1	4.2	2.3	0.7
40-44	48	44	2.0	1.9		2.3	1.6	0.8
45-49	38	41	1.8	1.9	10.5	4.9	0.8	0.5
50-54	62	56	3.4	3.0	8.1	1.8	0.8	0.5
55-59	79	74	4.6	4.2	5.1	6.8	0.6	0.6
60-64	91	84	5.5	4.8	2.2	2.4	0.4	0.5
65-69	112	93	7.6	5.8	2.7	2.2	0.4	0.5
70-74	111	88	9.6	6.4	8.1	6.8	0.5	0.5
75-79	86	99	11.4	9.1	5.8	12.1	0.5	0.6
80-84	64	81	14.1	9.4	18.8	18.5	0.5	0.5
85+	68	79	21.9	9.6	8.8	26.6	0.7	0.5
All ages	930	860			6.1	8.1	0.6	0.6
Incidence								
Raw			3.4	3.0				
WS			2.3	1.8				
ES			2.9	2.3				
BRD-S			3.4	2.6				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

Table 6a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of second primaries
for period 1998-2012
MALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C09-C10 Oropharynx	2	0.3	6.2	0.8	22.5		7.0	
C15 Oesophagus	3	0.5	5.6	1.2	16.5	#	10.3	33.3
C16 Stomach	5	1.4	3.6	1.2	8.4	#	15.0	
C17 Small intestine	2	0.1	13.8	1.7	49.8	#	7.7	
C18 Colon	5	3.2	1.6	0.5	3.7		7.6	
C23-C24 Bile	2	0.3	6.5	0.8	23.6		7.0	
C33-C34 Lung	6	3.6	1.7	0.6	3.6		9.9	16.7
C43 Malign. melanoma	4	1.2	3.3	0.9	8.5		11.6	
C46,C49 Soft tissue	3	0.2	16.6	3.4	48.4	#	11.7	
C61 Prostate	18	9.3	1.9	1.1	3.1	#	36.2	
C64 Kidney	5	1.1	4.7	1.5	10.9	#	16.3	
C67 Bladder	4	1.4	2.8	0.8	7.2		10.7	
C82-C85 NHL	5	1.3	4.0	1.3	9.3	#	15.6	
C91-C96 Leukaemia	3	0.5	5.6	1.2	16.5	#	10.3	
Other primaries	8	4.2	1.9	0.8	3.7		15.7	12.5
Not observed	0	3.2	0.0	0.0	1.2		-13.2	
All mult. primaries	75	31.8	2.4	1.9	3.0	#	179.3	4.0

Patients	645
Mean age at second malignancy (years)	69.3
Person-years	2406
Mean observation time (years)	3.7
Median observation time (years)	2.6

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category "Other primaries".

Table 6b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of second primaries
for period 1998-2012
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C18	Colon	3	2.1	1.4	0.3	4.1		3.8	
C19-C20	Rectum	6	0.9	6.4	2.4	13.9	#	22.5	
C33-C34	Lung	3	1.4	2.1	0.4	6.1		6.9	
C43	Malign. melanoma	3	0.8	3.9	0.8	11.4		9.9	
C46,C49	Soft tissue	3	0.1	24.4	5.0	71.4	#	12.8	
C50	Breast	14	6.4	2.2	1.2	3.6	#	33.6	
C53	Cervix uteri	2	0.3	6.1	0.7	22.0		7.4	
C54	Corpus uteri	3	1.1	2.6	0.5	7.7		8.2	
C64	Kidney	3	0.5	5.8	1.2	17.0	#	11.0	
C70-C72	CNS cancer	2	0.3	6.5	0.8	23.6		7.5	
C73	Thyroid	2	0.4	4.7	0.6	17.1		7.0	
C82-C85	NHL	2	0.8	2.5	0.3	9.0		5.3	
C91-C96	Leukaemia	2	0.3	6.0	0.7	21.6		7.4	
Other primaries		5	1.8	2.7	0.9	6.4		14.1	20.0
Not observed		0	3.7	0.0	0.0	1.0	#	-16.6	
All mult. primaries		53	21.3	2.5	1.9	3.3	#	140.7	1.9

Patients	601
Mean age at second malignancy (years)	69.6
Person-years	2253
Mean observation time (years)	3.7
Median observation time (years)	2.6

The occurrence of second malignancy is statistically significant.

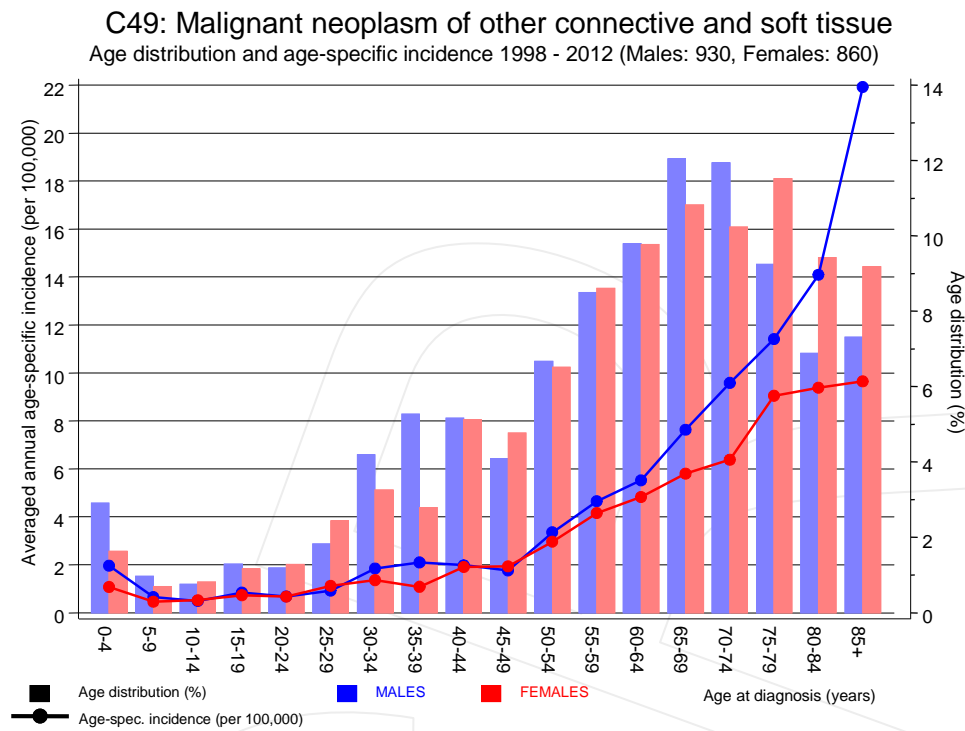Observed second malignancies with count 1 are pooled in category "Other primaries".

C49: Malignant neoplasm of other connective and soft tissue
Age distribution and age-specific incidence 1998 - 2012 (Males: 930, Females: 860)

Figure 7. Age distribution and age-specific incidence

C49: Malignant neoplasm of other connective and soft tissue
Age-specific incidence in international comparison

Region	Period	Average population
MCR	2002-2011	4.2 m
SEER	2004-2009	49.8 m

MALES   FEMALES   Age at diagnosis (years)
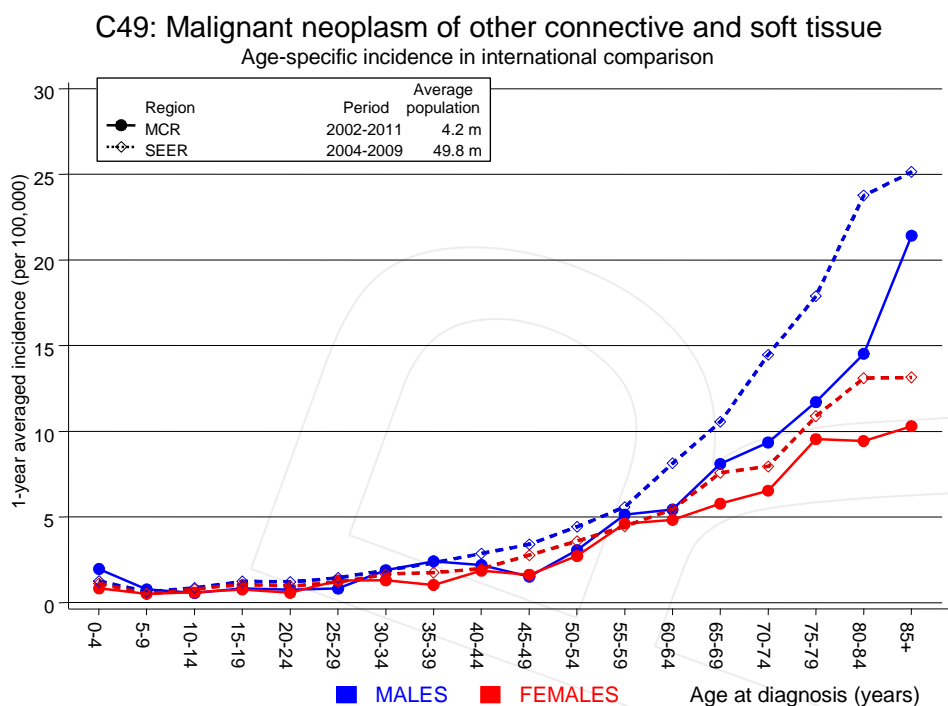
Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2012, based on the November 2011 submission. http://www.seer.cancer.gov.

C49: Malignant neoplasm of other connective and soft tissue
Cumulative follow-up years since diagnosis for period 1998 - 2012 (excl. DCO)

Gender	n	Target Sum	Median	Actual Sum	Median
All patients					
Males	611	2643	3.4	2485	3.1
Females	558	2539	3.4	2321	3.1
Patients alive					
Males	354	2136	5.3	1978	5.2
Females	320	2053	5.8	1835	5.2
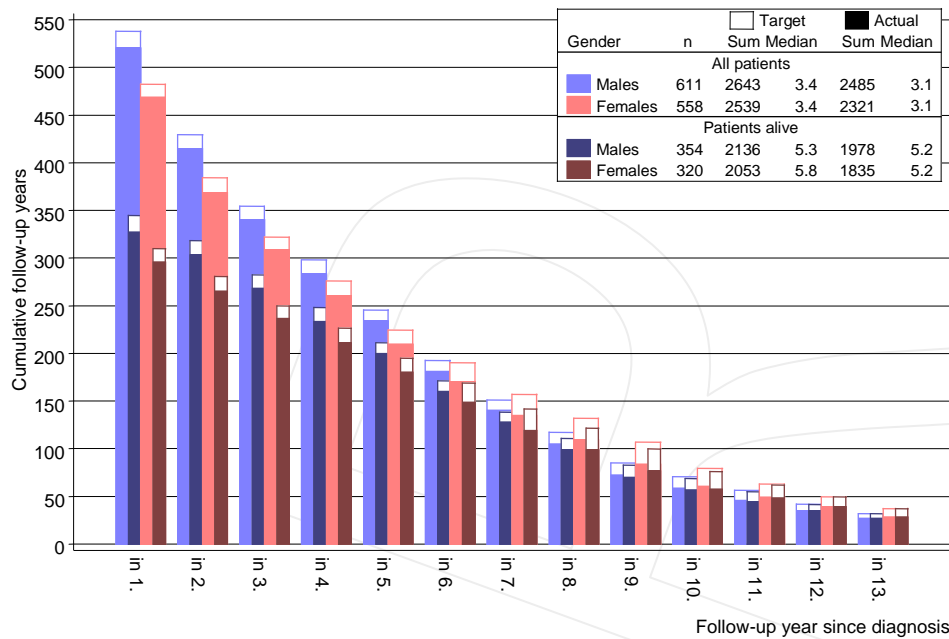
Figure 8. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Average incidence (world standard population) 2003 - 2008: Males
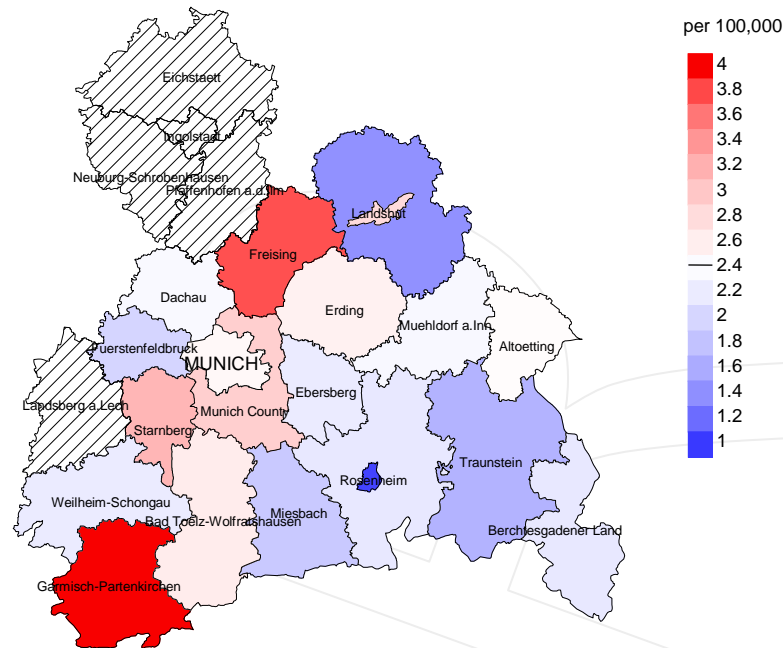
Average incidence (world standard population) 2003 - 2008: Females
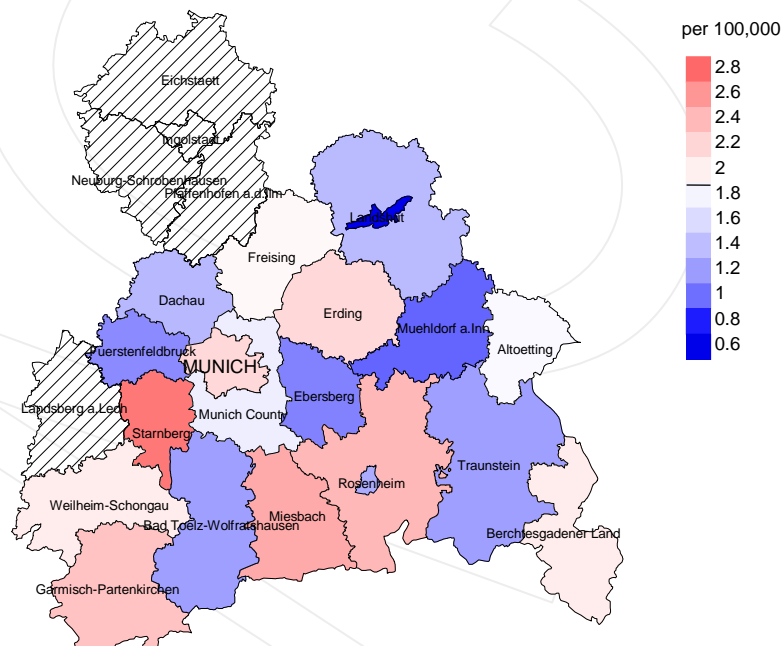
Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 2.4/100,000 WS N=401, females 1.9/100,000 WS N=375). Since cancer data are not available in some counties until 2007, the local incidence rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 5 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.1/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 4.0/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males
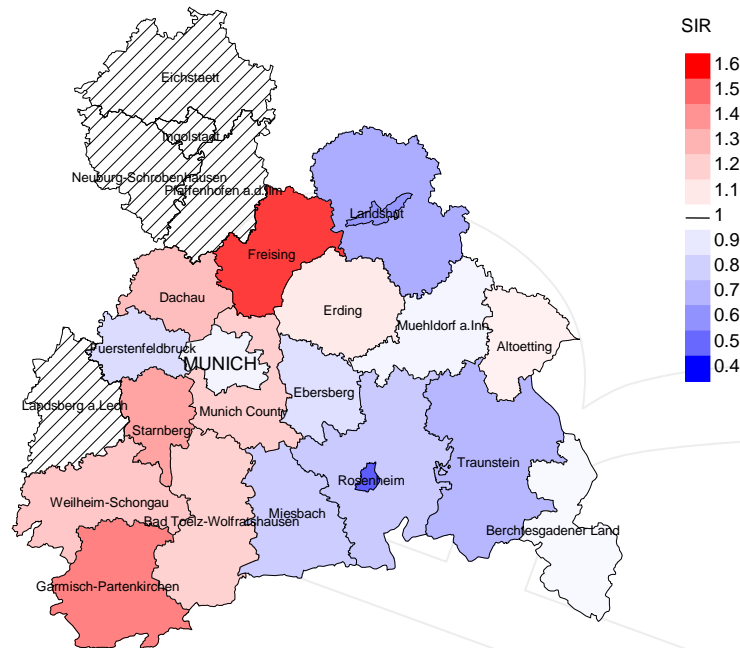
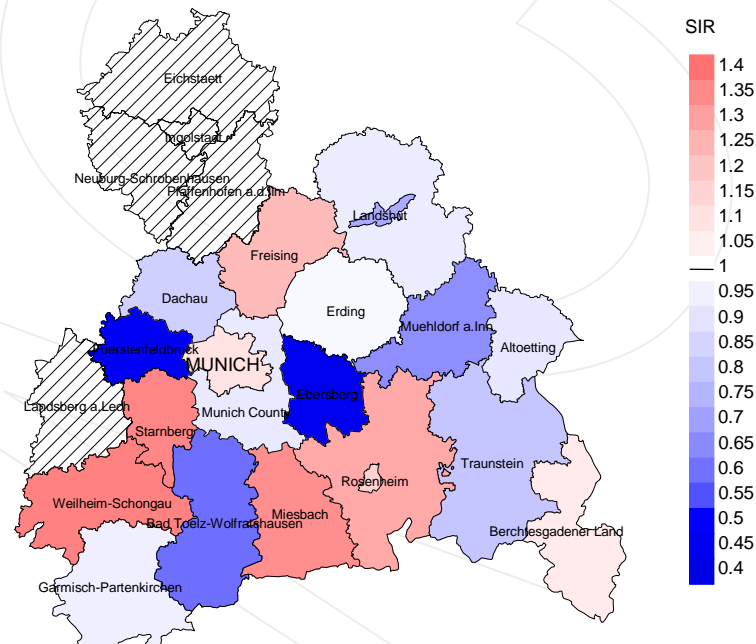Standardized incidence ratio (SIR) 2003 - 2008: Females

Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=401, females N=375). Since cancer data are not available in some counties until 2007, the local SIR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 5 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.45. Though, the value of this parameter may vary with an underlying probability of 99% between 0.10 and 1.27, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status,
proportion of DCO, deaths among the annual cohorts,
and proportion of available death certificates
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.52 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	84	100.0	8.3	65	77.4	95.4
1999	85	97.6	5.9	47	55.3	95.7
2000	89	97.8	10.1	50	56.2	100.0
2001	70	98.6	12.9	38	54.3	97.4
2002	111	97.3	8.1	70	63.1	94.3
2003	137	94.9	10.9	83	60.6	96.4
2004	118	99.2	10.2	63	53.4	100.0
2005	151	93.4	4.6	80	53.0	97.5
2006	108	95.4	8.3	58	53.7	100.0
2007	148	77.0	4.1	63	42.6	98.4
2008	152	73.0	3.9	78	51.3	97.4
2009	156	73.1	4.5	72	46.2	97.2
2010	140	70.0	3.6	60	42.9	98.3
2011	150	78.0	6.7	55	36.7	98.2
2012	93	97.8	11.8	25	26.9	100.0
1998–2012	1792	87.4	7.1	907	50.6	97.6

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates
and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.52 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	84	57	94.7	13	15.5
1999	85	50	94.0	11	12.9
2000	89	46	93.5	15	16.9
2001	70	40	97.5	12	17.1
2002	111	68	95.6	21	18.9
2003	137	72	95.8	31	22.6
2004	118	79	97.5	25	21.2
2005	151	82	98.8	21	13.9
2006	108	82	95.1	20	18.5
2007	148	88	98.9	21	14.2
2008	152	74	97.3	22	14.5
2009	156	106	98.1	30	19.2
2010	140	97	100.0	22	15.7
2011	150	92	100.0	32	21.3
2012	93	90	98.9	19	20.4
1998-2012	1792	1123	97.4	315	17.6

Table 10c

Annual cohorts of deaths, proportion of cancer-related and not cancer-
related deaths, and cancer recorded on death certificates
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.52 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. not cancer-related %	Prop. cancer recorded on death certificate %
1998	57	71.9	28.1	90.7
1999	50	80.0	20.0	91.5
2000	46	78.3	21.7	90.7
2001	40	90.0	10.0	94.9
2002	68	76.5	23.5	86.2
2003	72	86.1	13.9	88.4
2004	79	79.7	20.3	87.0
2005	82	82.9	17.1	88.9
2006	82	78.0	22.0	82.1
2007	88	83.0	17.0	89.7
2008	74	79.7	20.3	81.9
2009	106	80.2	19.8	83.7
2010	97	82.5	17.5	84.5
2011	92	78.3	21.7	83.7
2012	90	75.6	24.4	88.8
1998-2012	1123	80.1	19.9	86.8

Table 11a

Means of age at death according to the grouping in Table 10
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (not cancer-related) Years	Age at death (according to death certificate) Years
1998	30	68.1	63.6	78.6	66.9
1999	30	58.9	56.1	69.8	57.7
2000	24	62.1	59.5	72.0	60.7
2001	22	58.5	53.1	82.7	58.1
2002	36	68.6	64.9	77.0	66.6
2003	30	66.9	62.8	87.3	61.3
2004	43	65.6	62.5	79.3	65.5
2005	47	63.7	61.7	72.5	62.2
2006	40	66.8	64.5	74.5	65.5
2007	53	67.9	65.4	82.1	65.6
2008	35	74.5	71.2	87.9	70.2
2009	59	72.7	69.5	83.0	69.7
2010	52	73.0	70.9	80.0	70.9
2011	44	72.6	70.0	84.3	70.1
2012	45	71.9	68.7	84.4	70.5
1998-2012	590	68.3	65.2	79.7	66.2

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11b

Means of age at death according to the grouping in Table 10
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (not cancer-related) Years	Age at death (according to death certificate) Years
1998	27	66.8	61.3	82.4	66.1
1999	20	65.1	64.3	68.3	65.5
2000	22	68.6	69.3	66.3	67.3
2001	18	60.4	60.4		60.4
2002	32	66.1	63.3	81.2	66.2
2003	42	70.7	69.1	82.7	70.1
2004	36	70.8	66.4	86.2	66.9
2005	35	71.7	70.5	78.8	70.4
2006	42	73.5	70.5	84.6	72.0
2007	35	70.7	67.5	83.5	68.9
2008	39	75.9	72.3	90.0	72.4
2009	47	73.3	72.2	79.7	72.4
2010	45	68.1	65.8	85.9	66.4
2011	48	76.9	74.2	84.9	75.1
2012	45	75.5	72.4	83.2	74.5
1998-2012	533	71.2	68.7	82.4	69.7

By 2010, life expectancy for a newborn male in Germany is 77.5 years compared with 82.6 years for his female counterpart.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 12a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	21	1.9	0.51	1.3	0.47	1.7	0.50	2.2	0.52
1999	24	2.1	0.49	1.6	0.51	2.0	0.51	2.3	0.49
2000	19	1.7	0.44	1.2	0.43	1.5	0.45	1.8	0.44
2001	18	1.6	0.55	1.2	0.55	1.4	0.51	1.5	0.47
2002	25	1.3	0.37	0.8	0.29	1.2	0.35	1.5	0.39
2003	25	1.3	0.42	0.9	0.39	1.2	0.41	1.5	0.44
2004	35	1.9	0.52	1.2	0.47	1.6	0.50	2.1	0.60
2005	38	2.0	0.49	1.3	0.40	1.7	0.45	2.0	0.52
2006	31	1.6	0.50	1.1	0.55	1.4	0.52	1.6	0.48
2007	45	2.0	0.63	1.2	0.59	1.7	0.64	2.0	0.63
2008	28	1.3	0.35	0.6	0.26	1.0	0.32	1.3	0.38
2009	45	2.0	0.55	1.0	0.48	1.5	0.51	2.0	0.54
2010	40	1.8	0.56	0.8	0.39	1.3	0.47	1.7	0.54
2011	36	1.6	0.46	0.8	0.39	1.2	0.43	1.6	0.48
2012	36	1.6	0.77	0.8	0.66	1.2	0.72	1.5	0.80
1998-2012	466	1.7	0.50	1.0	0.44	1.4	0.48	1.8	0.52

Table 12b

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	20	1.7	0.47	1.1	0.49	1.3	0.49	1.5	0.48
1999	16	1.3	0.44	0.8	0.41	1.0	0.40	1.2	0.43
2000	17	1.4	0.37	0.6	0.21	0.9	0.27	1.2	0.33
2001	18	1.5	0.49	1.0	0.51	1.1	0.46	1.3	0.48
2002	27	1.4	0.61	0.9	0.64	1.1	0.63	1.2	0.62
2003	37	1.9	0.48	0.9	0.46	1.2	0.43	1.5	0.43
2004	28	1.4	0.55	0.7	0.38	1.0	0.46	1.2	0.52
2005	30	1.5	0.41	0.7	0.29	0.9	0.34	1.2	0.35
2006	33	1.6	0.72	0.7	0.44	1.0	0.56	1.3	0.66
2007	28	1.2	0.37	0.6	0.28	0.8	0.32	1.0	0.37
2008	31	1.3	0.44	0.6	0.34	0.8	0.36	1.0	0.38
2009	40	1.7	0.54	0.7	0.39	1.1	0.43	1.4	0.48
2010	40	1.7	0.59	0.9	0.62	1.2	0.61	1.5	0.60
2011	36	1.5	0.51	0.5	0.35	0.8	0.40	1.1	0.47
2012	32	1.4	0.70	0.6	0.48	0.8	0.56	1.0	0.61
1998-2012	433	1.5	0.50	0.7	0.41	1.0	0.44	1.2	0.47

Table 13

Age distribution of age at death (cancer-related) for period 1998-2012
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	8	0.9	0.9	6	1.3	1.3	2	0.5	0.5
5-9	9	1.0	1.9	3	0.6	1.9	6	1.4	1.8
10-14	5	0.6	2.4	3	0.6	2.6	2	0.5	2.3
15-19	5	0.6	3.0	3	0.6	3.2	2	0.5	2.8
20-24	8	0.9	3.9	4	0.9	4.1	4	0.9	3.7
25-29	16	1.8	5.6	10	2.1	6.2	6	1.4	5.1
30-34	16	1.8	7.4	10	2.1	8.3	6	1.4	6.5
35-39	18	2.0	9.4	14	3.0	11.3	4	0.9	7.4
40-44	33	3.7	13.1	19	4.1	15.4	14	3.2	10.6
45-49	30	3.3	16.4	17	3.6	19.0	13	3.0	13.6
50-54	37	4.1	20.5	22	4.7	23.7	15	3.5	17.1
55-59	61	6.8	27.2	31	6.6	30.3	30	6.9	24.0
60-64	89	9.9	37.1	46	9.8	40.1	43	9.9	33.9
65-69	102	11.3	48.4	54	11.5	51.6	48	11.1	44.9
70-74	115	12.7	61.1	69	14.7	66.3	46	10.6	55.5
75-79	114	12.6	73.8	49	10.4	76.8	65	15.0	70.5
80-84	110	12.2	85.9	53	11.3	88.1	57	13.1	83.6
85+	127	14.1	100.0	56	11.9	100.0	71	16.4	100.0
All ages	903	100.0		469	100.0		434	100.0	

Included in the statistics are 31.3% multiple primaries in males and 31.0% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**incl. multiple primaries**)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	6	2	0.4	0.22	0.2	0.14	19.4	8.7
5- 9	3	6	0.2	0.33	0.5	1.00	8.6	15.4
10-14	3	2	0.2	0.43	0.1	0.29	9.1	7.1
15-19	3	2	0.2	0.25	0.1	0.20	7.1	5.9
20-24	4	4	0.2	0.36	0.2	0.36	4.8	8.5
25-29	10	6	0.5	0.59	0.3	0.29	10.4	5.5
30-34	10	6	0.5	0.26	0.3	0.21	5.7	2.8
35-39	14	4	0.6	0.29	0.2	0.17	3.6	0.8
40-44	19	14	0.8	0.40	0.6	0.32	2.3	1.3
45-49	17	13	0.8	0.45	0.6	0.32	1.0	0.7
50-54	22	15	1.2	0.35	0.8	0.27	0.7	0.5
55-59	31	30	1.8	0.39	1.7	0.41	0.6	0.7
60-64	46	43	2.8	0.51	2.5	0.51	0.6	0.7
65-69	54	48	3.7	0.48	3.0	0.52	0.5	0.6
70-74	69	46	6.0	0.62	3.3	0.52	0.6	0.5
75-79	49	65	6.5	0.57	5.9	0.65	0.4	0.7
80-84	53	57	11.7	0.83	6.6	0.70	0.5	0.5
85+	56	71	18.1	0.81	8.7	0.90	0.7	0.6
All ages	469	434					0.6	0.6
Mortality								
Raw			1.7	0.50	1.5	0.50		
WS			1.0	0.44	0.7	0.41		
ES			1.4	0.48	1.0	0.44		
BRD-S			1.8	0.52	1.2	0.47		
PYLL-70								
per 100,000			18.3		13.4			
ES			18.2		13.4			
AYLL-70			18.7		16.9			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15a

Multiple primaries in deaths in period 1998-2012
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.6					1	100.0
C03-C06	Oral cavity	1	0.6					1	100.0
C07-C08	Salivary gland	1	0.6	1	100.0				
C09-C10	Oropharynx	5	2.8	1	20.0	1	20.0	3	60.0
C12-C13	Hypopharynx	2	1.1	1	50.0			1	50.0
C15	Oesophagus	6	3.4	1	16.7			5	83.3
C16	Stomach	2	1.1			1	50.0	1	50.0
C17	Small intestine	1	0.6	1	100.0				
C18	Colon	13	7.3	10	76.9	1	7.7	2	15.4
C19-C20	Rectum	7	3.9	5	71.4			2	28.6
C22	Liver	1	0.6			1	100.0		
C23-C24	Bile	1	0.6					1	100.0
C25	Pancreas	2	1.1	1	50.0	1	50.0		
C30-C31	Sinuses	3	1.7	2	66.7			1	33.3
C32	Larynx	1	0.6					1	100.0
C33-C34	Lung	15	8.4	4	26.7	3	20.0	8	53.3
C40-C41	Bone	3	1.7	1	33.3			2	66.7
C43	Malign. melanoma	11	6.2	7	63.6	1	9.1	3	27.3
C44	Skin others	19	10.7	6	31.6			13	68.4
C46,C49	Soft tissue	3	1.7			1	33.3	2	66.7
C50	Breast	1	0.6	1	100.0				
C61	Prostate	25	14.0	13	52.0	1	4.0	11	44.0
C62	Testis	5	2.8	3	60.0			2	40.0
C64	Kidney	8	4.5	4	50.0	1	12.5	3	37.5
C66	Ureter	1	0.6					1	100.0
C67	Bladder	9	5.1	4	44.4	1	11.1	4	44.4
C70-C72	CNS cancer	5	2.8	3	60.0			2	40.0
C73	Thyroid	2	1.1	2	100.0				
C76-C79	CUP	2	1.1			1	50.0	1	50.0
C81	Hodgkin lymphoma	1	0.6	1	100.0				
C82-C85	NHL	11	6.2	4	36.4			7	63.6
C90	Mult. myeloma	4	2.2	2	50.0	1	25.0	1	25.0
C91-C96	Leukaemia	6	3.4	3	50.0			3	50.0
All mult. primaries		178	100.0	81	45.5	15	8.4	82	46.1

Multiple primaries with number of cases n<1 are pooled in category "Other primaries".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998-2012
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	2	1.3	1	50.0			1	50.0
C17	Small intestine	1	0.6			1	100.0		
C18	Colon	7	4.4	3	42.9			4	57.1
C19-C20	Rectum	4	2.5	1	25.0	1	25.0	2	50.0
C23-C24	Bile	1	0.6					1	100.0
C25	Pancreas	2	1.3					2	100.0
C33-C34	Lung	6	3.8	1	16.7	1	16.7	4	66.7
C40-C41	Bone	2	1.3	1	50.0			1	50.0
C43	Malign. melanoma	11	6.9	6	54.5	2	18.2	3	27.3
C44	Skin others	6	3.8	2	33.3	1	16.7	3	50.0
C46,C49	Soft tissue	1	0.6					1	100.0
C48	Peritoneal	1	0.6					1	100.0
C50	Breast	65	40.6	51	78.5			14	21.5
C51	Vulva	1	0.6					1	100.0
C53	Cervix uteri	6	3.8	6	100.0				
C54	Corpus uteri	6	3.8	4	66.7			2	33.3
C55,C57	Fem. genitals un	1	0.6	1	100.0				
C56	Ovary	5	3.1	3	60.0	1	20.0	1	20.0
C64	Kidney	4	2.5	1	25.0			3	75.0
C65	Renal pelvis	1	0.6	1	100.0				
C67	Bladder	3	1.9	2	66.7			1	33.3
C69	Eye melanoma	1	0.6					1	100.0
C70-C72	CNS cancer	8	5.0	4	50.0	1	12.5	3	37.5
C73	Thyroid	1	0.6	1	100.0				
C74-C80	Cancer others	1	0.6			1	100.0		
C76-C79	CUP	1	0.6	1	100.0				
C82-C85	NHL	7	4.4	4	57.1	2	28.6	1	14.3
C90	Mult. myeloma	1	0.6	1	100.0				
C91-C96	Leukaemia	4	2.5	2	50.0			2	50.0
All mult. primaries		160	100.0	97	60.6	11	6.9	52	32.5

Multiple primaries with number of cases n<1 are pooled in category "Other primaries".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**Singular primaries only ***)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	6	2	0.4	0.22	0.2	0.14	23.1	8.7
5- 9	3	6	0.2	0.33	0.5	1.00	9.1	16.7
10-14	3	1	0.2	0.50	0.1	0.17	9.1	3.8
15-19	3	2	0.2	0.25	0.1	0.20	7.7	6.5
20-24	3	4	0.2	0.30	0.2	0.36	3.8	9.3
25-29	10	6	0.5	0.59	0.3	0.29	11.1	5.8
30-34	10	6	0.5	0.26	0.3	0.22	5.8	3.2
35-39	13	4	0.6	0.28	0.2	0.18	3.6	0.9
40-44	18	12	0.7	0.42	0.5	0.31	2.4	1.3
45-49	16	11	0.7	0.46	0.5	0.32	1.0	0.7
50-54	18	14	1.0	0.34	0.7	0.31	0.7	0.6
55-59	25	22	1.5	0.37	1.2	0.38	0.5	0.6
60-64	38	36	2.3	0.49	2.1	0.52	0.5	0.7
65-69	44	38	3.0	0.48	2.4	0.52	0.5	0.6
70-74	52	36	4.5	0.58	2.6	0.53	0.5	0.5
75-79	37	50	4.9	0.67	4.6	0.72	0.4	0.6
80-84	42	45	9.2	0.89	5.2	0.71	0.6	0.5
85+	43	55	13.9	0.80	6.7	0.86	0.7	0.5
All ages	384	350					0.6	0.6
Mortality								
Raw			1.4	0.49	1.2	0.50		
WS			0.9	0.43	0.6	0.40		
ES			1.2	0.47	0.8	0.43		
BRD-S			1.4	0.51	1.0	0.47		
PYLL-70								
per 100,000			16.8		12.0			
ES			16.9		12.1			
AYLL-70			19.8		17.9			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**Single primaries only ***)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	6	2	0.4	0.22	0.2	0.14	24.0	8.7
5- 9	3	6	0.2	0.33	0.5	1.00	9.4	17.1
10-14	3	1	0.2	0.50	0.1	0.17	9.1	4.2
15-19	3	2	0.2	0.25	0.1	0.20	7.7	7.7
20-24	3	3	0.2	0.30	0.2	0.30	4.1	7.5
25-29	10	6	0.5	0.59	0.3	0.29	11.9	6.2
30-34	10	6	0.5	0.27	0.3	0.23	6.0	3.6
35-39	12	4	0.5	0.26	0.2	0.19	3.5	1.0
40-44	17	11	0.7	0.43	0.5	0.30	2.4	1.3
45-49	15	11	0.7	0.45	0.5	0.33	1.0	0.8
50-54	16	13	0.9	0.33	0.7	0.31	0.7	0.6
55-59	20	20	1.2	0.33	1.1	0.38	0.5	0.6
60-64	37	34	2.2	0.56	2.0	0.54	0.6	0.8
65-69	39	35	2.7	0.49	2.2	0.52	0.5	0.7
70-74	41	27	3.5	0.55	2.0	0.44	0.5	0.4
75-79	31	46	4.1	0.67	4.2	0.75	0.4	0.7
80-84	32	40	7.0	0.76	4.6	0.68	0.5	0.6
85+	35	49	11.3	0.71	6.0	0.80	0.7	0.6
All ages	333	316					0.7	0.7
Mortality								
Raw			1.2	0.47	1.1	0.49		
WS			0.8	0.42	0.6	0.39		
ES			1.0	0.45	0.7	0.42		
BRD-S			1.2	0.49	0.9	0.46		
PYLL-70								
per 100,000			16.0		11.4			
ES			16.2		11.6			
AYLL-70			20.4		18.1			

* See corresponding tables with multiple primaries.

C49: Malignant neoplasm of other connective and soft tissue
Age distribution and age-specific mortality 1998 - 2012 (Males: 466, Females: 433)
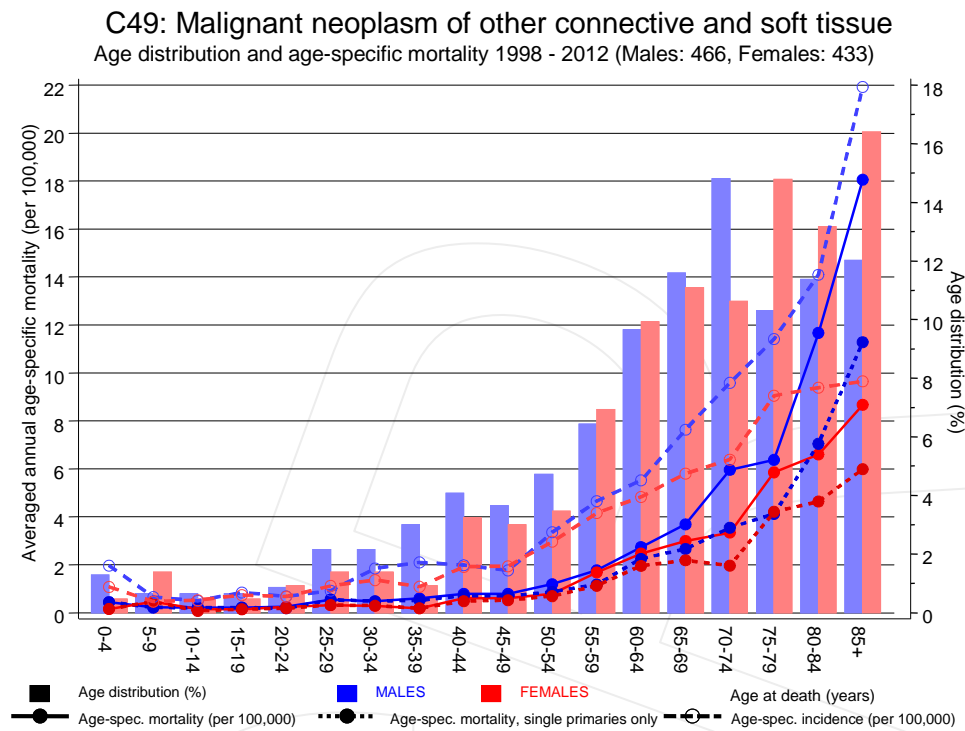
Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at soft tissue cancer-related death (see Table 10) should be considered.

Average mortality (world standard population) 2003 - 2008: Males
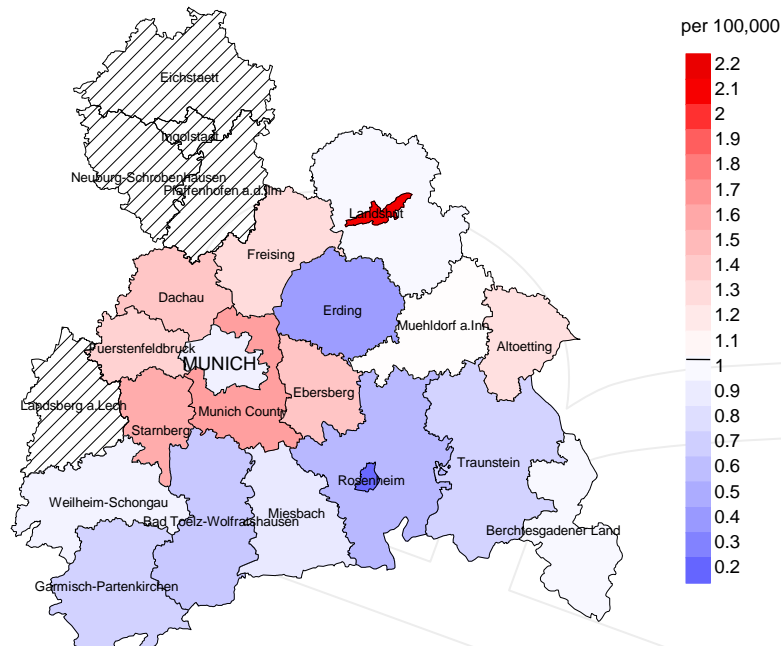
Average mortality (world standard population) 2003 - 2008: Females
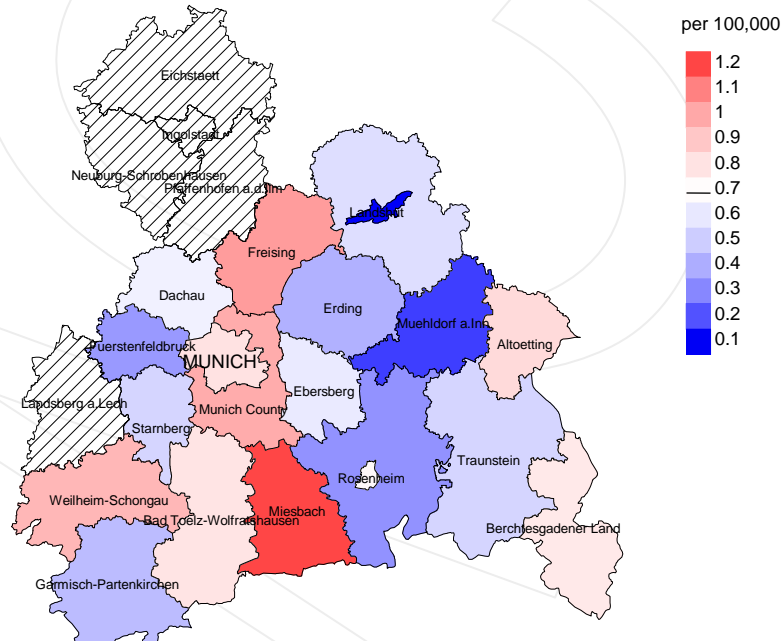
Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 1.0/100,000 WS N=193, females 0.7/100,000 WS N=180). Since cancer data are not available in some counties until 2007, the local mortality rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 3 women died from soft tissue cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 3.2/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males
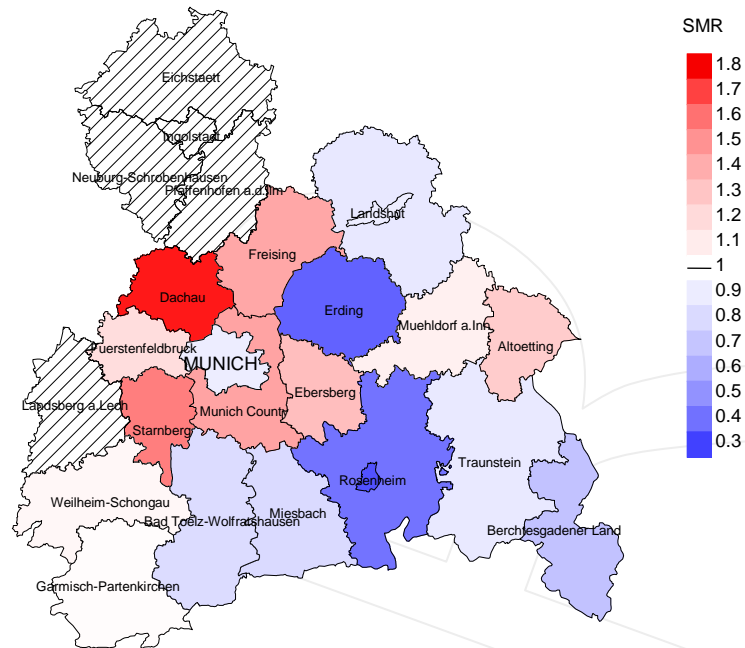
Standardized mortality ratio (SMR) 2003 - 2008: Females
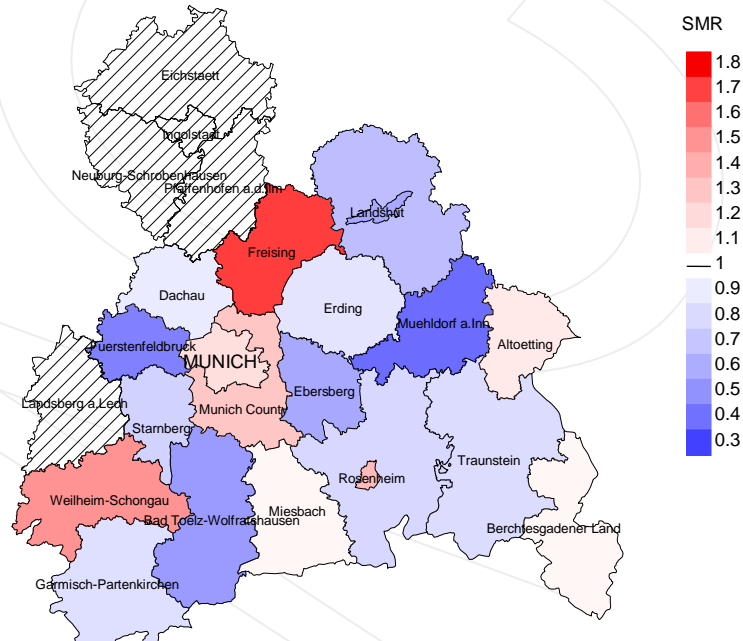
Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=193, females N=180). Since cancer data are not available in some counties until 2007, the local SMR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 3 women died from soft tissue cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.58. Though, the value of this parameter may vary with an underlying probability of 99% between 0.06 and 2.11, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. **All multiple primaries included**

   The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. **First singular primary** (no information about other prior or synchronous malignancy)

   The mortality statistic describes the tumor-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. **Single primary** (no information about other prior, syn- or metachronous malignancy)

   The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
BRD-S	German standard population
DCO	Death certificate only
EAR	Excess absolute risk
	= excess cancer cases (O - E) per 10,000 person-years
ES	European standard population (old)
FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany
	(Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
MCR	Munich Cancer Registry (Tumorregister München)
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SEER	Surveillance, Epidemiology, and End Results (USA)
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

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